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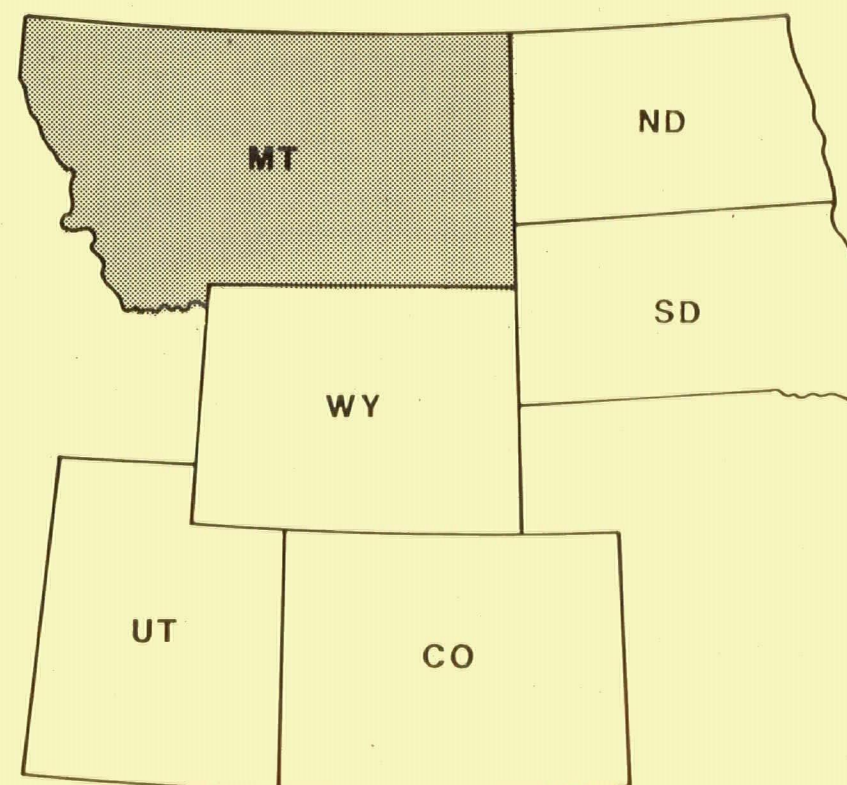
Research and Development



HISTORICAL AERIAL PHOTOGRAPHIC ANALYSIS OF WOOD TREATMENT FACILITIES

Montana

EPA Region 8



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ENVIRONMENTAL PROTECTION
AGENCY

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October 1985

HISTORICAL AERIAL PHOTOGRAPHIC ANALYSIS
OF WOOD TREATMENT FACILITIES

Montana

by

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Contract No. 68-03-3245

Project Officer

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ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
LAS VEGAS, NEVADA 89114

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ABSTRACT

This report presents the results of analyses of historical aerial photographs covering two wood treatment facilities in Montana. These study sites are the Burlington Northern Railroad Tie Treatment Plant in Somers and the Idaho Pole Company in Bozeman. These are proposed hazardous waste sites on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). These analyses will assist in field investigations and potential enforcement actions by U.S. Environmental Protection Agency's Region 8 office.

The analyses used black-and-white, color infrared, and color photographs ranging in date from 1937 to 1983 to monitor physical conditions and activities that could potentially lead to contamination of the surrounding environment specifically surface and/or groundwater.

The historical photo coverage of the Burlington Northern Railroad, Somers Tie Treatment Plant, reveals the facility was active in 1937 and was operational in 1983. Over the period for which photographs were available no industrial discharges of waste liquids into the natural drainage were observed. A drainage ditch originating near a sump pit at this facility and extending into Flathead Lake was visible over this analysis period; however, no spillage or leakage from the site was observed in this ditch.

Historical photos of the Idaho Pole Company showed this company in operation in 1954 and active in 1982. Drainage ditches link this site to Rocky Creek, a tributary of the East Gallatin River. The first ditch is visible on the 1954 photograph and the second ditch is visible on the 1981 photograph. These historical photographs of this plant suggest surface runoff leaving the wood treatment operations could have transported contaminants into Rocky Creek. The 1982 photograph reveals a liquid discharge from this site entering the natural drainage system.

The U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, prepared this report at the request of the Agency's Environmental Services Division in Region 8 and the Office of Emergency and Remedial Response in Washington, D.C.

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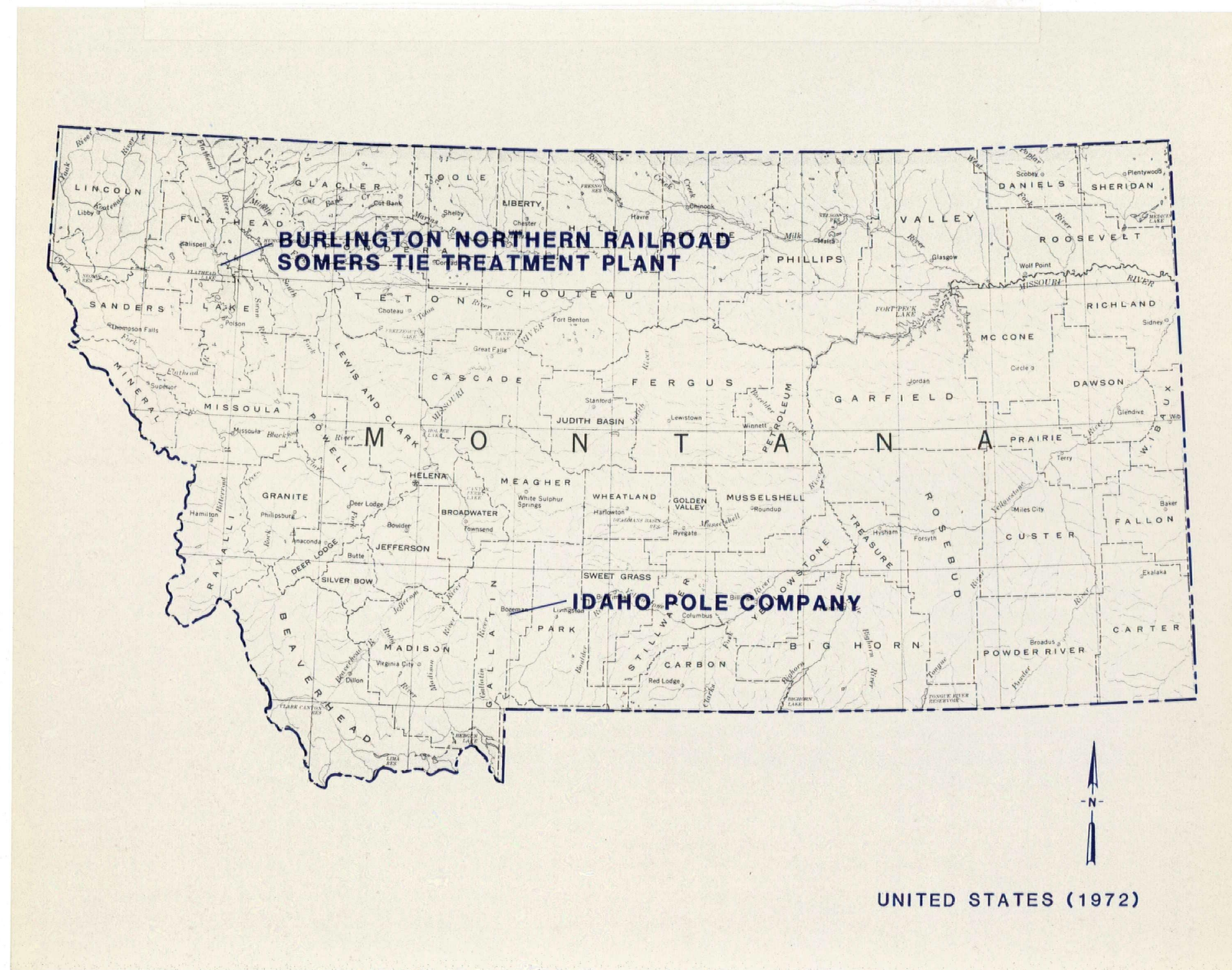


Figure 1. Study area locations, Montana. Scale 1:3,800,000.



Figure 1. Study area locations, Montana. Scale 1:3,800,000.

INTRODUCTION

Historical aerial photographs ranging in date from 1937 to 1983 document the changes of the physical plant and operations for select time durations of two wood treatment facilities in Montana (Figure 1). These study sites are the Burlington Northern Railroad Tie Treatment Plant in Somers and the Idaho Pole Company in Bozeman. These are proposed hazardous waste sites on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). These aerial photographic analyses will assist in field investigations and potential enforcement actions.

The locations and approximate sizes of the Montana sites are described below. Both study sites were previously reported on in reports produced by the EPA Environmental Monitoring Systems Laboratory in Las Vegas, Nevada.

The Burlington Northern Railroad Tie Treatment Plant is on the north side of the community of Somers located on the north shore of Flathead Lake. The site, most of which is open storage yards, covers approximately 112 acres. This study site was previously reported on in the Las Vegas Laboratory report "Aerial Photographic Analysis of Waste Study Sites, Montana" TS-AMD-83056e (November 1984).

The Idaho Pole Company is on the northeast side of Bozeman adjacent to Rocky Creek, a tributary of the East Gallatin River. The site, most of which is open storage yards, covers approximately 40 acres. This study site was previously reported on in the Las Vegas Laboratory reports "Aerial Photographic Analysis of Oil, Chemical, and Industrial Facilities, Volume 2, Montana - July 1982" (TS-AMD-82032c, April 1983) and "Aerial Photographic Analysis of Waste Study Sites, Bozeman, Laurel, and Billings, Montana, July 1982" TS-AMD-83094 (March 1984).

Topics addressed in this report include surface water contamination; indications of leachate; drainage patterns; disposal and/or burial of solid, liquid, and sludge wastes, and visible vegetation stress associated with facility operations.

This report was prepared by the EPA's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, at the request of the Agency's Environmental Services Division in Region 8 and Office of Emergency and Remedial Response in Washington, D.C.

METHODOLOGY

Stereoscopic pairs of historical and current aerial photographs are used to perform the analysis. Stereo viewing enhances the interpretation because it allows the analyst to observe the vertical as well as horizontal spatial relationships of natural and cultural features. Stereoscopy is also an aid in distinguishing between various shapes, tones, textures, and colors that can be found within the study area.

Evidence of waste burial is a prime consideration when conducting a hazardous waste analysis. Leachate or seepage resulting from burial and dumping of hazardous materials might threaten existing surface or ground-water sources. Pools of unexplained liquid are routinely noted because they can indicate seepage from buried wastes and may enter drainage channels that allow contaminants to move off the site. An excellent indicator of how well hazardous materials are being handled at a site is the presence or absence of spills, spill stains, and vegetation damage. Trees and other forms of vegetation that exhibit a marked color difference from surrounding members of the same species are labeled "dead," "stressed," or "damaged" based upon the degree of noticeable variation. Vegetation is so labeled only after consideration of the season in which the photographs were acquired.

Wetlands frequently as a result of availability of water support aquatic or hydrophytic vegetation. These lands are generally identified by the presence of this vegetation on aerial photographs. Wetlands are generally transitional zones between terrestrial and aquatic systems where the water table is at, near, or above the land surface for a significant part of most years.

Drainage analysis determines the direction a spill or surface runoff would follow. Direction of drainage is determined from analysis of the photographs and from U.S. Geological Survey topographic maps. Whenever they are available, 7.5-minute quadrangle maps (scales 1:24,000 or 1:62,500) are used to show site location and to provide geographic and topographic information.

The U.S. Environmental Protection Agency's Statement of Procedures on Floodplain Management and Wetlands Protection (Executive Orders 11988 and 11990, respectively) requires EPA to determine if removal or remedial actions at hazardous wastes sites will affect wetlands or floodplains and to avoid or minimize adverse impacts on those areas. To aid in compliance with these orders, significant wetland areas located within and adjacent to this site have been identified and delineated. However, these sites have not been visited to verify the accuracy of wetland identification.

The "Background" information, presented at the beginning of each study section, about study sites, was excerpted from the document "Hazardous Waste Sites: Descriptions of 244 Sites on Proposed Update #2 to National Priorities List" (HW 8.4, U.S. Environmental Protection Agency, Second Printing, December 1984).

Results of the analysis are shown on annotated overlays attached to the photos. The prints in this report have been enlarged when appropriate to show maximum detail. The following table provides specifications of the photographs used in this report.

TABLE 1. AERIAL PHOTOGRAPHY SPECIFICATIONS

Site name, location, and geographic coordinates	Figure	Date of acquisition	Original scale	Film type†	Photo source‡
Burlington Northern Railroad	3	8/16/37	1:20,000	B&W	ASCS
Tie Treatment Plant	4	12/30/46	1:27,699	B&W	EROS
Somers, MT	5	7/13/54	1:20,000	B&W	ASCS
(48°05.0'N 114°13.1'W)	6	7/01/61	1:20,000	B&W	ASCS
	7	6/14/74	1:40,000	B&W	ASCS
	8	9/23/79	1:40,000	B&W	SCS
	9	8/29/83	1:8,000	Color	EMSL (83056 FR439)
Idaho Pole Company	11	9/09/54	1:20,000	B&W	ASCS
Bozeman, MT	12	7/18/65	1:20,000	B&W	ASCS
(45°41.3'N 111°01.3'W)	13	7/16/81	1:22,400	CIR	EROS
	14	7/25/82	1:6,000	Color	EMSL (82032 FR373)

†Photo type identification:

B&W: Black-and-white

‡Photo source identification:

ASCS: U.S. Department of Agriculture, Agricultural Stabilization and
Conservation Service, Salt Lake City, Utah.EMSL: U.S. Environmental Protection Agency, Environmental Monitoring Systems
Laboratory, Las Vegas, Nevada.EROS: U.S. Department of the Interior, Geological Survey, Earth Resources
Observation Systems Data Center, Sioux Falls, South Dakota.SCS: U.S. Department of Agriculture, Soil Conservation Service, Salt Lake
City, Utah.

BURLINGTON NORTHERN RAILROAD, SOMERS TIE TREATMENT PLANT
SOMERS, MONTANA

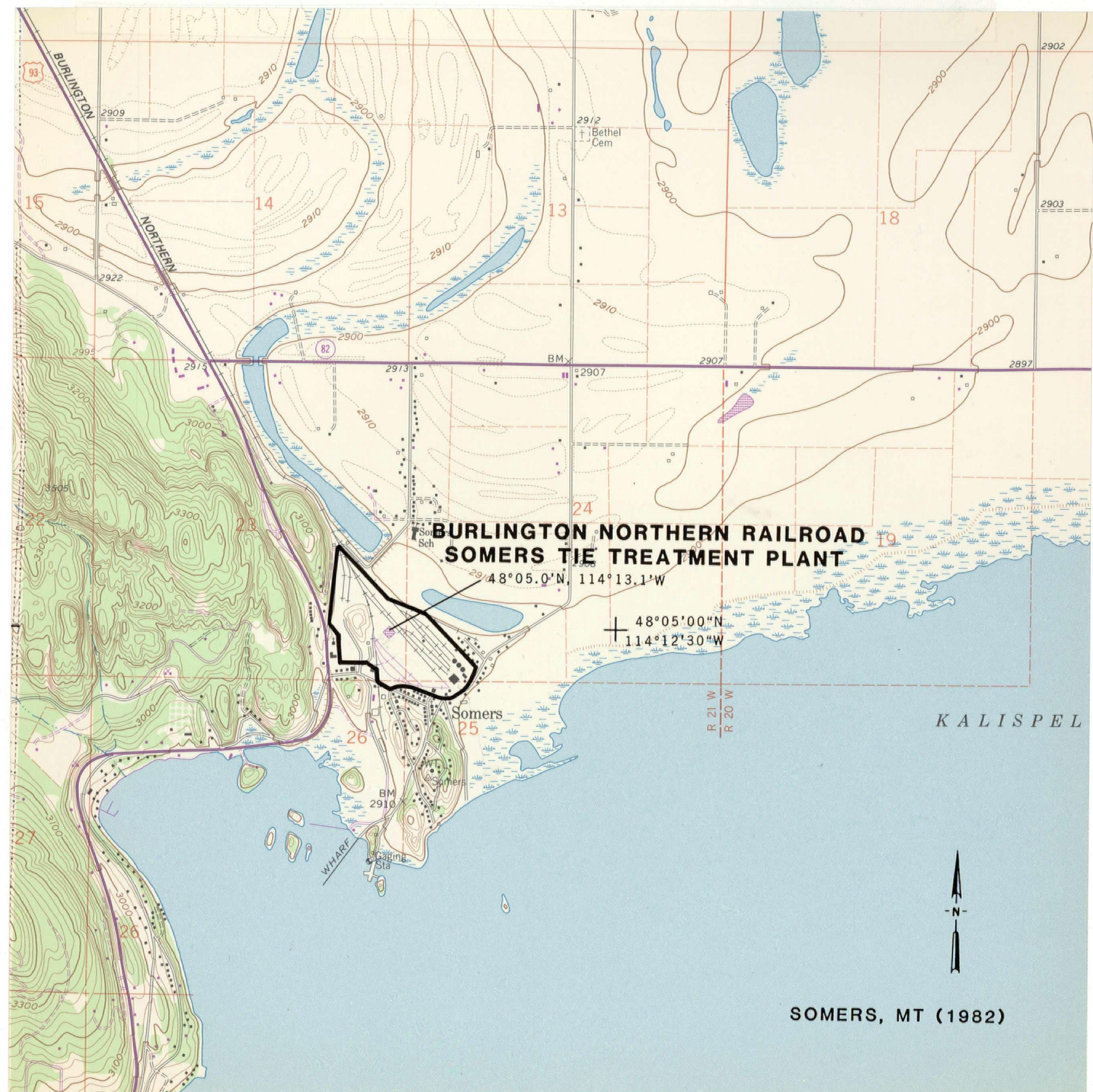


Figure 2. Site location, Somers, Montana. Scale 1:24,000.



Figure 2. Site location, Somers, Montana. Scale 1:24,000.

PHOTO ANALYSIS

BURLINGTON NORTHERN RAILROAD, SOMERS TIE TREATMENT PLANT

Background

Burlington Northern Railroad has treated ties on its site in Somers, Montana, since around 1900. The plant's current operations are regulated under the Resource Conservation and Recovery Act (RCRA). A waste disposal pond downgradient of the RCRA-regulated facility has not been used since 1974 and is not regulated by RCRA.

The old pond was used to dispose of creosote wastes from the wood treatment process. The wastes were discharged from the pond via a ditch to a marshy area on the shore of Flathead Lake. About 400 people live within 1 mile of the site. Flathead Lake is the largest freshwater lake west of the Mississippi River. It is extensively used for camping and fishing and towns, such as Somers, along the lake such as Somers use it for drinking water.

This facility does not lie within the 100-year flood zone according to the Flood Insurance Rate Map† of Flathead County, Montana; however, the adjacent oxbow lake and all of Flathead Lake do.

Analysis Summary

Black-and-white and color photographs from 1937, 1946, 1954, 1961, 1974, 1979, and 1983 were used in this analysis. The facility is located in the Flathead River Valley directly adjacent to Flathead Lake. The 1937 photograph revealed an operational tie treatment plant. An operational sawmill is visible on the north shore of Flathead Lake approximately one-half mile southwest of the study site. A drainage ditch runs from the east side of Somers into Flathead Lake, but no visible linkage of this ditch to the tie treatment plants could be discerned. The 1946,

†Federal Emergency Management Agency, Flathead County, Montana. Panel 2280 of 3245, September 5, 1984.

1954, 1961, 1974, and 1979 photographs reveal little significant change at the tie treatment plant. The adjacent sawmill was dismantled by 1961 and two marinas were built on the same locations by 1979. The facility was still operating as of August 1983 and no new pollution threats were observed; however, it is likely rainwater runoff transports pollutants from the wood treatment areas into the natural drainage system and adversely impacts Flathead Lake. Rainwater runoff from the northeast side of the tie treatment plant drained into an old oxbow lake located adjacent to the northeast side of the site throughout the analysis period.

August 16, 1937

The Burlington Northern Railroad, Somers Tie Treatment facility is on the north side of the community of Somers which is located on the northwest corner of Flathead Lake. The 1937 photograph (Figure 3) shows the active tie treatment plant covers approximately 82 acres. The site is in the Flathead River Valley which extends north. The facility is constructed on alluvial deposits and is adjacent to terrain depression of an old oxbow lake. Regional drainage flows southeast in this river valley into Flathead Lake. The site is constructed on nearly level ground; however, the terrain drops off along the site's north perimeter into the adjacent terrain depression of an old oxbow lake (annotation "A"). The cut lumber used for railroad ties arrives at the facility from a sawmill located approximately one-half mile away on the north shore of Flathead Lake. The wood treatment facility contains processing buildings and three vertical storage tanks near its southeast corner (annotation "B"). Drip tracks (annotation "C") are visible leading into the tie treatment building and are identified by the associated dark ground stains.

Most of the area of this facility is open storage yards containing treated and untreated wood railroad ties. Spillage of creosote or other tie treating compounds appears to flow southeast, downslope, into a terrain depression on the south side of the tie treatment building (annotation "D"). A shallow drainage ditch (annotation "E") starts outside of the tie treatment site and channels runoff to Flathead Lake. There are no visible drainage channels that link this ditch to the wood treatment facility.



Figure 3. Burlington Northern Railroad, Somers Tie Treatment Plant, August 16, 1937. Approximate scale 1:8,100.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||| DIKE
- STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA



Figure 3. Burlington Northern Railroad, Somers Tie Treatment Plant, August 16, 1937. Approximate scale 1:8,100.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

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TRANSPORTATION/UTILITY

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SITE FEATURES

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- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

August 18, 1946

The 1946 photograph (Figure 4) shows the wood treatment plant is operational and its open storage yards contain numerous stacks of railroad ties. There are no significant changes at this site since 1937 (Figure 3). The saw mill southwest of the tie treatment facility is also active.

Surface drainage patterns appear unchanged from the 1937 photograph. The drainage from the south end on the facility appears to enter a terrain depression (annotation "A") while drainage from the north portion of the site enters a terrain depression of an old oxbow lake (annotation "B"). There is no discernable indication of leachate or vegetation stress.

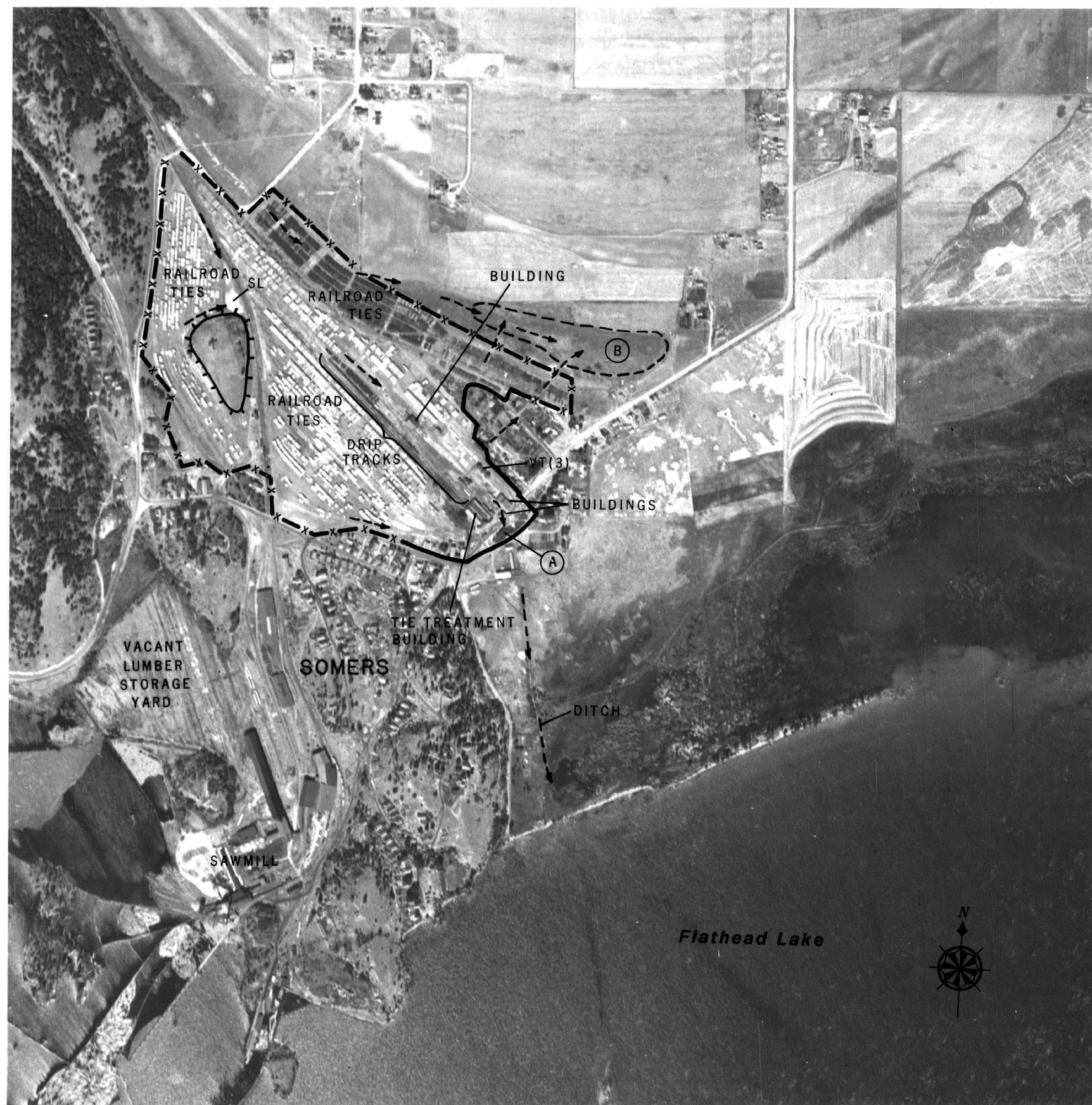


Figure 4. Burlington Northern Railroad, Somers Tie Treatment Plant, August 18, 1946. Approximate scale 1:9,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
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DRAINAGE

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TRANSPORTATION/UTILITY

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- PIPELINE
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SITE FEATURES

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- SL STANDING LIQUID (SMALL)
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- ⬭ MOUNDED MATERIAL (EXTENSIVE)
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- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
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Figure 4. Burlington Northern Railroad, Somers Tie Treatment Plant, August 18, 1946. Approximate scale 1:9,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

X—X—X— FENCED SITE BOUNDARY

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TRANSPORTATION/UTILITY

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SITE FEATURES

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STANDING LIQUID

SL STANDING LIQUID
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 EXCAVATION, PIT
(EXTENSIVE)

**MOUNDED MATERIAL
(EXTENSIVE)**

MM MOUNDED MATERIAL
(SMALL)

CR CRATES/BOXES

DR DRUMS

HT HORIZONTAL TANK

PT PRESSURE TANK

VT VERTICAL TANK

CA CLEARED AREA

DG DISTURBED GROUND

FL FILL

IM IMPOUNDMENT

LG LAGOON

OD OPEN DUMP

OF OUTFALL

SD SLUDGE

ST STAIN

SW SOLID WASTE

TR TRENCH

WD WASTE DISPOSAL AREA

July 13, 1954

The 1954 photograph (Figure 5) reveals an operational wood treatment plant with numerous stacks of railroad ties in its open storage yards. It is likely the dark-toned stacks in the northwest portion of the facility are treated while the lighter-toned stacks have not been treated. There has been little change at this plant since 1937 (Figure 3); one observed difference is the emptying of the storage yard along the site's northeast side (annotation "A") and the inward movement of the perimeter fence.

The sawmill southwest of the wood treatment plant has less lumber in its adjacent lumber storage yards. This sawmill could be closed down.

Surface drainage from the vacated storage yard of the wood treatment plant flows into the adjacent oxbow lake. Runoff from the tie treatment area is now apparently retained in a sump pit where a terrain depression had previously collected runoff. No drainageways are visible that link this sump pit to a drainage ditch leading into Flathead Lake. There are no discernable signs of leachate or vegetation stress associated with operations at this site.



Figure 5. Burlington Northern Railroad, Somers Tie Treatment Plant, July 13, 1954.
Approximate scale 1:9,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
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- GATE/ACCESS POINT
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DRAINAGE

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TRANSPORTATION/UTILITY

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- PIPELINE
- - - - - POWERLINE

SITE FEATURES

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- EXCAVATION, PIT (EXTENSIVE)
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INTERPRETATION CODE

BOUNDARIES AND LIMITS

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DRAINAGE

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TRANSPORTATION/UTILITY

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SITE FEATURES

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| MM | MOUNDED MATERIAL (SMALL) |
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| DR | DRUMS |
| HT | HORIZONTAL TANK |
| PT | PRESSURE TANK |
| VT | VERTICAL TANK |
| CA | CLEARED AREA |
| DG | DISTURBED GROUND |
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| OF | OUTFALL |
| SD | SLUDGE |
| ST | STAIN |
| SW | SOLID WASTE |
| TR | TRENCH |
| WD | WASTE DISPOSAL AREA |

July 1, 1961

The 1961 photograph (Figure 6) shows the operational tie treatment facility has not changed significantly since 1954 (Figure 5). The quantity of stacked untreated railroad ties is reduced.

The drip tracks (annotation "B") appear to be in a low area of the site; consequently, spillage along these tracks appears generally contained onsite. The sump pit (annotation "C") at the southeast end of the tie treatment building receives spillage from the tie treatment plant as indicated by visible ground stains. There are no discernable indications of vegetation stress at this facility.

The adjacent sawmill southwest of this tie treatment plant is dismantled and the abandoned lumber storage yard is overgrown by vegetation.



Figure 6. Burlington Northern Railroad, Somers Tie Treatment Plant, July 1, 1961.
Approximate scale 1:7,200.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
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DRAINAGE

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TRANSPORTATION/UTILITY

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SITE FEATURES

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Figure 6. Burlington Northern Railroad, Somers Tie Treatment Plant, July 1, 1961.
Approximate scale 1:7,200.

INTERPRETATION CODE

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TRANSPORTATION/UTILITY

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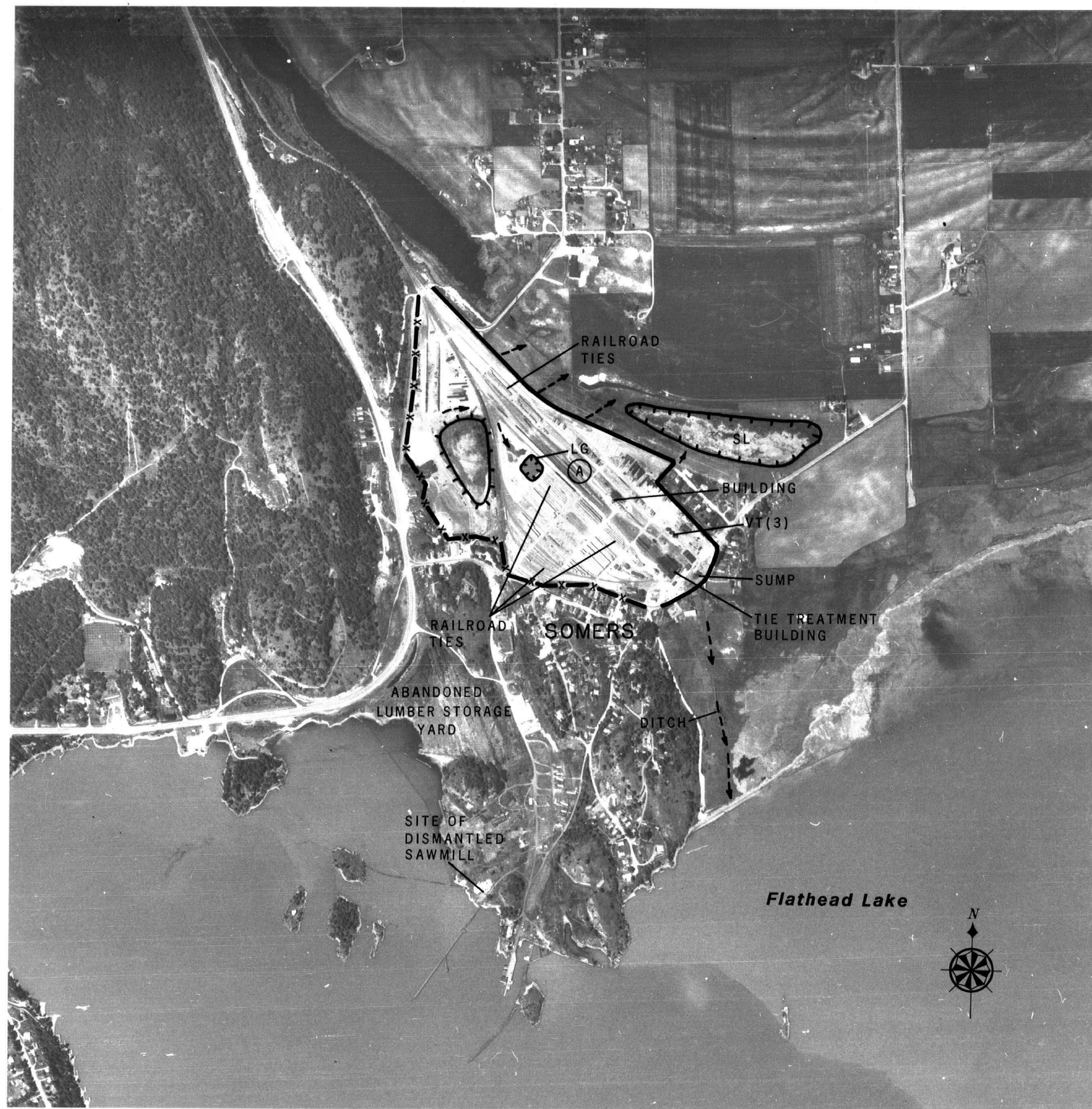
SITE FEATURES

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June 14, 1974

The 1974 photograph (Figure 7) shows an active wood treatment facility not changed significantly since 1961 (Figure 6). A waste lagoon containing liquid (annotation "A") is not^W present near the center of the facility.

The oxbow lake adjacent to the site's northeast corner appears to support wetland vegetation; it continues to collect a portion of the runoff from the tie treatment facility. There are no discernable indications of leachate or vegetation stress at this facility.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- ┌ ┐ GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

Figure 7. Burlington Northern Railroad, Somers Tie Treatment Plant, June 14, 1974.
Approximate scale 1:11,500.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

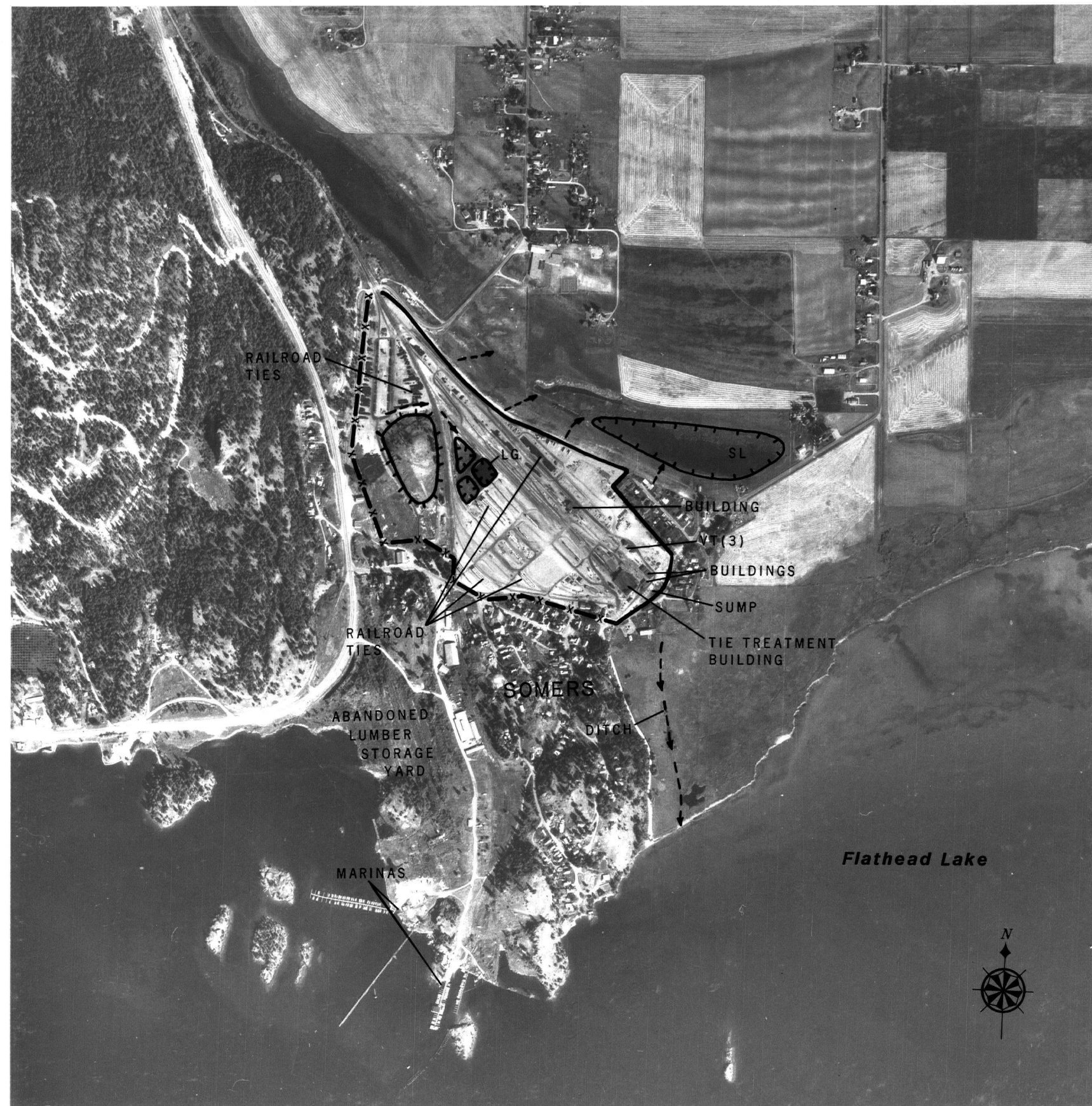
Figure 7. Burlington Northern Railroad, Somers Tie Treatment Plant, June 14, 1974.
Approximate scale 1:11,500.

September 23, 1979

The 1979 photograph (Figure 8) shows an active tie treatment plant. Two additional lagoons have been dug adjacent to the lagoon near the center of the site; however, these do not appear to contain liquid. This brings the number of lagoons to three.

Two marinas are visible on Flathead Lake southwest of the tie treatment facility on the site where a sawmill was observed in the 1937, 1946, and 1954 photographs (Figures 3-5).

The surface drainage patterns remain unchanged over the study area. There are no discernable indications of vegetation stress at this facility.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- ┌ ─ ─ ─ ┐ GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

Figure 8. Burlington Northern Railroad, Somers Tie Treatment Plant, September 23, 1979. Approximate scale 1:11,200.

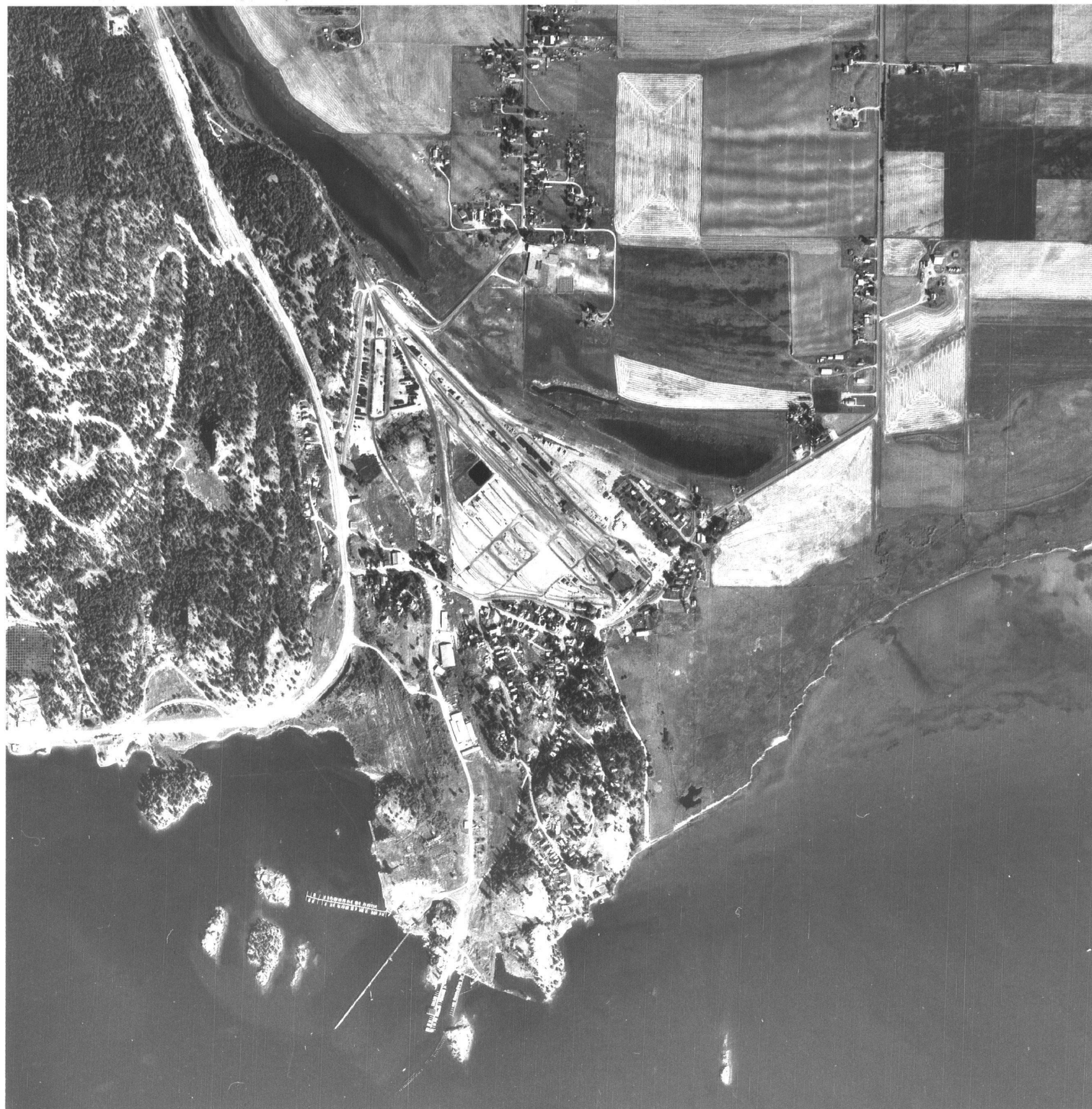


Figure 8. Burlington Northern Railroad, Somers Tie Treatment Plant, September 23, 1979. Approximate scale 1:11,200.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - ↔ INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

August 29, 1983

The 1983 photograph (Figure 9) shows an operational railroad tie treatment facility. The color photograph reveals widespread ground stains around the drip tracks (annotation "A") leading into the wood treatment building and throughout this processing area at the southeast side of the facility. Northwest of this stained area is a saw building with its associated piles of yellow sawdust. Three vertical storage tanks are on the north side of the wood treatment building and a sump pit is along its south side. Dark ground stains around the sump pit and trench at the east side of the site suggest the capture of spillage or leakage from the adjacent wood treatment building. There are no indications that waste liquid has escaped from this pit or that waste liquid from this wood treatment plant has been deliberately discharged into the natural drainage system. The sump pit, however, appears unlined and could potentially threaten ground water supplies.

Surface runoff from the northeast portion of the facility drains into an adjacent old oxbow lake; this body of standing liquid is now littered with wood debris. Drainage from the southern portion of the site flows southeast and is likely to reach Flathead Lake. It is likely this rainwater runoff could transport pollutants from the wood treatment areas into the natural drainage system and adversely impacts Flathead Lake.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- ┌ ┐ GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- - - - - DRAINAGE
- FLOW DIRECTION
- ↔ INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||| DIKE
- ~~~~~ STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

Figure 9. Burlington Northern Railroad, Somers Tie Treatment Plant, August 29, 1983. Approximate scale 1:6,100.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

X—X—X—X	FENCED SITE BOUNDARY
	UNFENCED SITE BOUNDARY
x x x x x	FENCE
- - - - -	PROPERTY LINE
	GATE/ACCESS POINT
	SECTION CORNER





DRAINAGE

← - - - DRAINAGE
 ← FLOW DIRECTION
 ↔ - - - ↔ INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

===== VEHICLE ACCESS
+ + + + RAILWAY
..... PIPELINE
- - - - POWERLINE

SITE FEATURES

	DIKE
	STANDING LIQUID
SL	STANDING LIQUID (SMALL)
	EXCAVATION, PIT (EXTENSIVE)
	MOUNDED MATERIAL (EXTENSIVE)
MM	MOUNDED MATERIAL (SMALL)
CR	CRATES/BOXES
DR	DRUMS
HT	HORIZONTAL TANK
PT	PRESSURE TANK
VT	VERTICAL TANK
CA	CLEARED AREA
DG	DISTURBED GROUND
FL	FILL
IM	IMPOUNDMENT
LG	LAGOON
OD	OPEN DUMP
OF	OUTFALL
SD	SLUDGE
ST	STAIN
SW	SOLID WASTE
TR	TRENCH
WD	WASTE DISPOSAL AREA

IDAHO POLE COMPANY
BOZEMAN, MONTANA

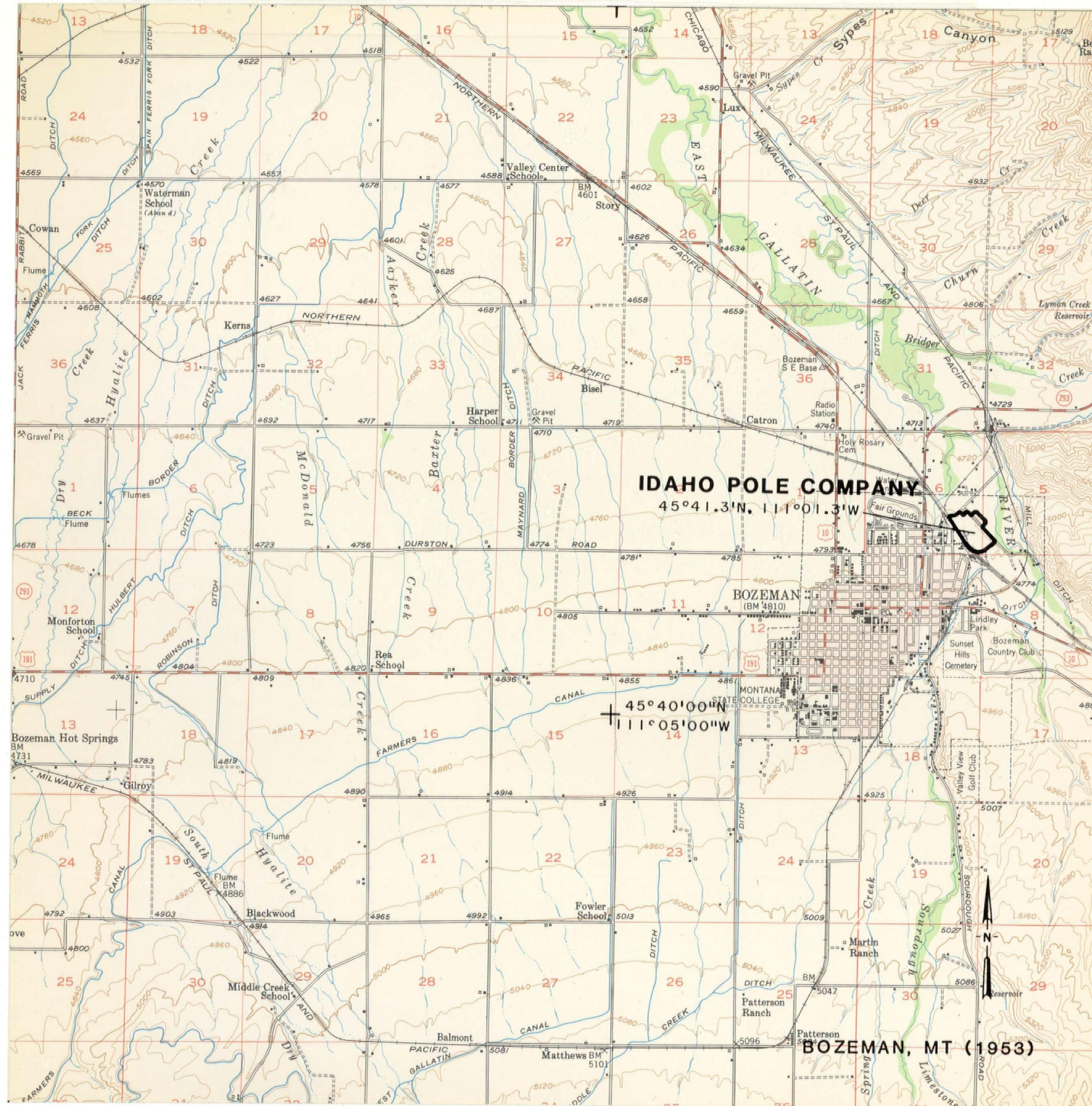


Figure 10. Site location, Bozeman, Montana. Scale 1:62,500.

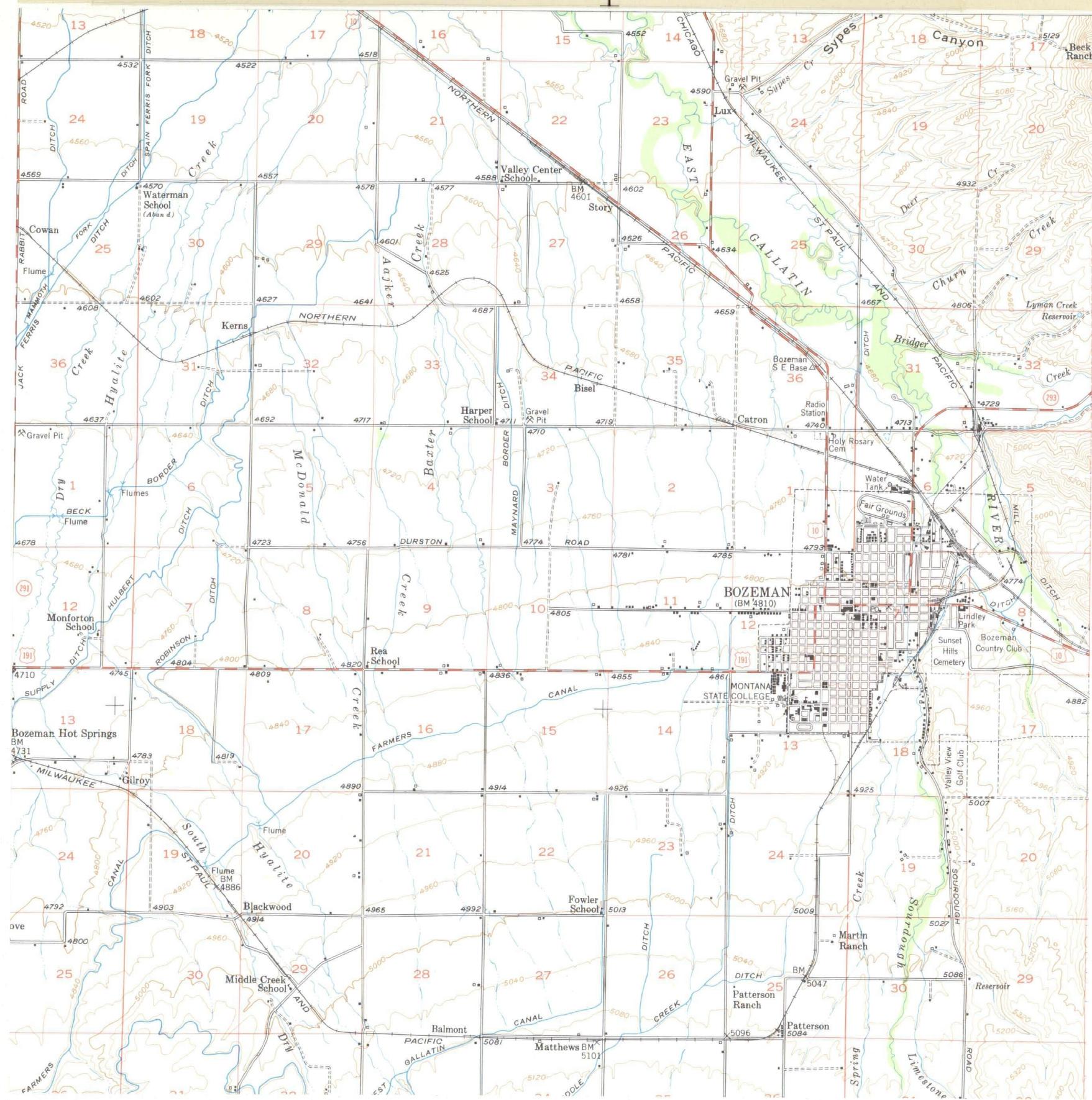


Figure 10. Site location, Bozeman, Montana. Scale 1:62,500.

PHOTO ANALYSIS

IDAHO POLE COMPANY

Background

Idaho Pole Company treats wood products with pentachlorophenol (PCP) on a 10-acre site in Bozeman, Montana. The pole yard has been in operation since 1946. Ground water is very shallow and flows to the north/northwest, where it discharges into Rocky Creek. About 1,250 people within three miles of the site use ground water as a source of drinking water.

Any hazardous material leaking into the ground during the wood treatment process could contaminate ground water due to its shallow level and to highly permeable soils. A greater concern is that wastewater discharged onto the surface at the facility could rapidly infiltrate the shallow ground water. The facility has a history of surface water problems associated with its discharges.

This facility does not lie within the 100 year flood zone according to the Flood Zone Rate Map,[†] of the City of Bozeman, Montana; however, the northeast perimeter of the site is within the 500 year flood zone.

Analysis Summary

Black-and-white, color infrared, and color photographs from 1954, 1965, 1981, and 1982 were used in this analysis. The 1954 photograph shows an active wood treatment plant. A drainage ditch is visible from the site to a natural tributary of the East Gallatin River. By 1965 this drainage ditch appeared blocked and drainage had backed up to fill terrain depressions on the east side of the site. The 1981 and 1982 photographs reveal that dumping of wood chips and sawdust has filled the depressions on the east side of the site to form mounds. The adjacent ditch, again open, carries runoff away from the site and into the natural drainage system. The 1982 photograph reveals a liquid discharge from the dipping tank escaping from the facility flowing northward via a drainage ditch to Rocky Creek.

[†]Federal Emergency Management Agency, City of Bozeman, Montana. Panel 8 of 21, March 15, 1982.

September 9, 1954

The 1954 photograph (Figure 11) shows an operational wood processing facility at the northeast corner of Bozeman. The facility is approximately 600 feet west of Rocky Creek. The regional terrain slopes gently toward the northwest and surface runoff from Bozeman eventually reaches the East Gallatin River.

The facility is served by rail spurs from the Burlington Northern Railroad and Cedar Street road along its northeast perimeter. The site contains wood treatment buildings, chemical storage tanks, and large open storage yards containing treated and untreated wood poles. Near the center of the facility in a slight depression is a wigwam burner.

Surface runoff at the site flows southeast into a culvert under Cedar Street to a ditch (annotation "A") that empties into Rocky Creek. No visible leachate or vegetation stress can be identified from activities at this site.



Figure 11. Idaho Pole Company, September 9, 1954. Approximate scale 1:7,050.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- - - - - DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||||| DIKE
- STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA



Figure 11. Idaho Pole Company, September 9, 1954. Approximate scale 1:7,050.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
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- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

July 18, 1965

The 1965 photograph (Figure 12) shows an active wood treatment facility. Since 1954 the quantity of stacked poles has increased and the open storage yards are enlarged. A saw building is identified next to the wood treatment building.

The surface runoff from this facility has accumulated in a terrain depression (annotation "A") at the east side of the facility and in a lagoon adjacent to the treatment building. A drainage ditch described on the 1954 photograph (Figure 11, annotation "A") appears to be blocked causing the backup of standing liquid (annotation "A"). The lagoon next to the treatment building is likely to contain waste liquids from wood treatment. There are no signs of leachate or vegetation stress at this facility.



Figure 12. Idaho Pole Company, July 18, 1965. Approximate scale 1:6,650.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x— FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- — — — — PROPERTY LINE
- — — — — GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← — — — — DRAINAGE
- ← — — — — FLOW DIRECTION
- ↔ — — — — INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- +++++ RAILWAY
- PIPELINE
- POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA



Figure 12. Idaho Pole Company, July 18, 1965. Approximate scale 1:6,650.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - ↔ INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

July 16, 1981

The 1981 color infrared photograph (Figure 13) reveals an active wood processing facility. Construction of Interstate Route 90 is completed and its raised roadbed runs on the northeast side of the site forming a barrier to surface runoff; a drainage ditch runs along its south side to culverts. Bodies of standing liquid are visible along the south side of this highway. The facility has enlarged since 1965 to extend along the north side of Cedar Street and is bordered by Interstate Route 90. The waste lagoon next to the treatment building described on the 1965 photograph (Figure 12) is absent. A dipping tank (annotation "B") stands in this new northern section of the site. Surface runoff from treated poles stacked out to dry flows eastward.

Sawdust, wood chips, and wood wastes are dumped in the east portion of the site where a mound of this material has accumulated (annotation "A"). This dumping of waste has filled the terrain depression in this area that had contained standing liquid on the 1965 photograph (Figure 12, annotation "A").

Surface runoff from the site flows northeast to a culvert under the Interstate Route 90 that empties into the natural drainage system and Rocky Creek.



Figure 13. Idaho Pole Company, July 16, 1981. Approximate scale 1:8,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x—x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- PROPERTY LINE
- ┌──┐ GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ←----- DRAINAGE
- ← FLOW DIRECTION
- ↔-----↔ INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- POWERLINE

SITE FEATURES

- |||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- ┌ ┐ GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- |||||| DIKE
- STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- ⬭ EXCAVATION, PIT (EXTENSIVE)
- ⬭ MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
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- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA

Figure 13. Idaho Pole Company, July 16, 1981. Approximate scale 1:8,000.

July 25, 1982

The 1982 photograph (Figure 14) shows the operational wood treatment facility has not expanded or changed significantly since 1981 (Figure 13). Wood solid wastes such as bark and sawdust are dumped in the east corner of the site where a mound (annotation "A") of this material has accumulated. Runoff from this wood solid waste pile escapes into a ditch (annotation "B") that flows via a culvert into Rocky Creek.

A probable source of pollutants is a liquid discharge (annotation "C") from a hose apparently connected to the dipping tank at the north side of the site. This liquid flows north, off the facility, and into a drainage ditch along the south side of Interstate Route 90. The ditch enters a culvert under Interstate Route 90 and flows north via a drainage ditch (annotation "D") to Rocky Creek.

Liquid is also visible draining away from the treated poles as they are stacked out to dry on the south side of this dipping tank. Surface runoff from these drying poles drains eastward, leaves the facility via ditches (annotations "B" and "E"), and eventually reaches Rocky Creek. It is likely that rainwater runoff leaving the site could transport contaminants from the stacks of treated wood poles into the natural drainage system, specifically Rocky Creek.

The vegetation (annotation "F") along Rocky Creek on the north side of Interstate Route 90, downstream from the study site, appears spotty compared to the 1965 photograph (Figure 12). This reduction in vegetation probably results from stream scouring due to channelization of this waterway.



Figure 14. Idaho Pole Company, July 25, 1982. Approximate scale 1:6,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||| DIKE
- STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA



Figure 14. Idaho Pole Company, July 25, 1982. Approximate scale 1:6,000.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x— FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- - - - - PROPERTY LINE
- GATE/ACCESS POINT
- + SECTION CORNER

DRAINAGE

- ← - - - - - DRAINAGE
- ← FLOW DIRECTION
- ↔ - - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY
- PIPELINE
- - - - - POWERLINE

SITE FEATURES

- ||||||| DIKE
- ===== STANDING LIQUID
- SL STANDING LIQUID (SMALL)
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OD OPEN DUMP
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- WD WASTE DISPOSAL AREA